

App. No. 10/002,300
Response Dated May 22, 2006

Reply to Office Action Dated March 3, 2006

REMARKS/ARGUMENTS

Please reconsider the application in view of the above amendments and the following remarks. Claims 1-51 remain in this application. Claims 1 and 21 have been amended herein. No new matter has been added by way of these amendments.

Applicant notes with appreciation that the Examiner has allowed claims 41-51. The Examiner further indicated that claims 2-18 and 22-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claim. For reasons stated below, Applicant believes that the base claims from which these claims depend are allowable and that there is no need to rewrite these claims in independent forms. Accordingly, Applicant respectfully defers rewriting the claims at this time.

Rejection(s) under 35 U.S.C § 102

Claims 1, 19-21, 39 and 40 stand rejected under 35 U.S.C. § 102(b) as being anticipated by WO 00/50735. This rejection is respectfully traversed.

The Examiner asserts that WO'735 discloses the method and apparatus of Claim 1 and the program storage device of Claim 21. (See Office Action, p. 2-3).

WO'735 discloses methods to determine the abrasion potential of a given formation. (See page 7, lines 24-25 and claim 1.) WO'735 uses factors such as insitu formation strength determined as depicted in Figure 7 of WO'735 from bottom hole pressure, unconfined compressive strength ("UCS") and internal angle of friction. (Page 9, line 35 – page 12, line 9 and Figure 7.) WO'735 discloses a rule matrix and fuzzy set methods to use the determined insitu formation strength and the sand content of a formation to determine the abrasion potential

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of the formation. (See page 12, line 10- page 13, line 22.) Claim 27 of WO'735 recites in part "utilizing said data processing system to ...apply said input to said inference engine computer program and to produce as an output an indicator of potential for abrasive wear of a drill bit in a target wellbore....." Claim 27 further recites a plurality of bits with "different resistance to abrasive wear which corresponds generally to said indicator of potential for abrasive wear of a drill bit" and "selecting a particular one of said plurality of available rock bits based at least in part upon said potential for abrasive wear..." (Emphasis added.)

Claim 1 has been amended to recite:

1. A method of generating and recording or displaying a sequence of drill bits, chosen from among a plurality of bit candidates to be used, for drilling an Earth formation in response to input data representing Earth formation characteristics of the formation to be drilled, comprising the steps of:

comparing said input data representing said characteristics of the formation to be drilled with a set of historical data including a plurality of sets of Earth formation characteristics and a corresponding plurality of sequences of drill bits to be used in connection with said sets of Earth formation characteristics, and, using statistical processing, locating a substantial match between said characteristics of the formation to be drilled associated with said input data and at least one of said plurality of sets of Earth formation characteristics associated with said set of historical data, wherein the Earth formation characteristics include rock strength; when said substantial match is found, generating one of said plurality of sequences of drill bits in response thereto; and recording or displaying said one of said plurality of sequences of drill bits on a recorder or display device.

No new matter has been added; support for this amendment can be found in the specification as filed, for example at paragraphs 00114 and 00135-0136.

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WO'735 does not disclose a method of selecting bits by "locating a substantial match, using statistical processing, between said characteristics of the formation to be drilled associated with said input data and at least one of said plurality of sets of Earth formation characteristics associated with said set of historical data" and does not disclose that the Earth formation characteristics used for this match include "rock strength." Instead, WO'735 uses rock strength as one input to determine insitu formation strength of a formation, uses the insitu formation strength as a factor to determine abrasiveness of the formation and then selects bits based on resistance to abrasive wear. As WO'735 does not disclose basing a substantial match on use of rock strength and does not disclose use of statistical processing, Claim 1 is felt to be patentably distinguishable over WO'735.

Claims 2-20 depend from Claim 1 and contain all of its limitations. Accordingly, claims 2-20 are also felt to be patentably distinguishable over WO'735. In addition, Claim 20 adds further limitations relating to the type of input data and the bit selection output data which is not disclosed or suggested by WO'0735. WO'735 fails to disclose or suggest any output data other than abrasion and fails to even contemplate the outputs, such as ROP, as recited in Claim 20. Reconsideration is respectfully requested.

Similar to Claim 1, Claim 21 has been amended to recite:

A program storage device readable by a machine tangibly embodying a program of instructions executable by the machine to perform method steps for generating and recording or displaying a sequence of drill bits, chosen from among a plurality of bit candidates, for drilling an Earth formation in response to input data representing Earth formation characteristics of the formation to be drilled, said method steps comprising:

comparing said input data representing said characteristics of the formation to be drilled with a set of historical data including a plurality of sets of Earth formation characteristics and a

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corresponding plurality of sequences of drill bits to be used in connection with said sets of Earth formation characteristics, and locating a substantial match, using statistical processing, between said characteristics of the formation to be drilled associated with said input data and at least one of said plurality of sets of Earth formation characteristics associated with said set of historical data, wherein the Earth formation characteristics includes rock strength;

when said substantial match is found, generating one of said plurality of sequences of drill bits in response thereto; and

recording or displaying said one of said plurality of sequences of drill bits on a recorder or display device.

As with respect to Claim 1, WO'735 does not disclose or suggest all of the limitations of Claim 21 as amended, nor are the missing limitations analogous to simply looking up bit characteristics in a catalog. Accordingly, reconsideration is respectfully requested.

Claim 22-40 depend from Claim 21 and contain all of its limitations. Accordingly, Claims 22-40 are also felt to be patentably distinguishable over WO'735. As with the claims dependent on Claim 1, Claim 40 adds further limitations relating to the type of input data and the bit selection output data which is not disclosed or suggested by WO'0735. WO'735 fails to disclose or suggest any output data other than abrasion and fails to even contemplate the outputs, such as ROP, as recited in Claim 40. Accordingly, reconsideration is respectfully requested.

In view of the above, the cited art fails to anticipate the claimed invention. Applicant, therefore, requests withdrawal of the rejections under 35 U.S.C. § 102.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. Applicant believes this reply to be fully responsive to all outstanding issues and place this application in condition for allowance. If this belief is incorrect, or other issues arise, do not hesitate to contact the undersigned at the telephone number listed below.

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This paper is submitted in response to the Office Action dated March 3, 2006, for which the three-month date for response is June 3, 2006. Please apply any charges not covered or any credits, to Deposit Account 04-1708 (Reference Number 94.0075).

Date: 5/22/06

Respectfully submitted,

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